Medical Textiles Research on Hospital Material Efficiency

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The Healthcare Environment for Reusable Textiles

Previous and current research on disposable and reusable medical textiles market trends, awareness, and attitudes

- UC Davis Division of Textiles and Clothing NSF grant
- Personal gown preference and reasons (Rucker et al, 2009)
- Predicting healthcare workers preference for disposable and reusable surgical gowns (Brasch, 2011)
- Linen Efficiency Campaign Reduces Linen Use by 12%. (Brasch, 2014)
- Material Flow Analysis for Hospital Efficiency: Case Study on Surgical Attire (Brasch, 2015)
UC Davis Health System

UC Davis Medical Center (UCDMC)
- 615-bed teaching hospital
- 1 of 5 UC Medical Campuses
- Established Sustainability Dept on both campuses
- Large student population with sustainability awareness

Linen replacement and laundering costs totaled around $2 million in FY 2010-11 and exceeded $2.25 million in FY 2011-12.
Considered projects on material efficiency

- Reusable isolation gowns
- Reusable surgical linen
- Reusable under pads
- Reusable warm-up jackets
- *Scrub dispenser* (completed)
Best Practices: Technology Solutions

- Scrub dispenser
  - Gaining control of scrub access and loss
  - Installed Dec 2013, six-month trial
  - Before and after systematic comparisons
  - New garment system is more efficient
  - recovering lost inventory, reduced labor
What are the systematic impacts of the technological intervention and changes in management on the garment process?
Sankey Diagram, pre-intervention material flow

- Total available garments: 16,200
- Buy new garments: 562
- Clean laundry return: 5,342
- Stock at Laundry: 10,246
- Loss at Laundry: 50
- Laundry return other departments: unknown
- Laundry return Main lockers: 1,202
- Rag diversion: 65
- Loss at locker room: 2,896
- Laundry return Other departments: 5,816
- Delivered Main lockers: 4,431
- Loss at return: 268
- Delivered Laundry: 10,296
- Stock at Hospital: 10,296

kg per 1 month of operations
Sankey diagram, post-intervention material flow

Total available: 16,584
Buy new garments: 207
Clean laundry return: 4,975

Stock at laundry: 4,975
Gain at Laundry: 458

Stored at hospital: 6,885

Loss at locker room: 86
Permitted Use: 2,368
Delivered main lockers: 2,454
Delivered other departments: 4,430
Laundry return main lockers: 2,419
Laundry return other departments: unknown

Gain at return: 114

Rag diversion 63

The new system gained 423 kg of garments, highlighting the impact of staff hoarding

kg per 1 month of operations
Best Practices: Behavior Modification

• Communicate with managers, find champions

• Involve Environmental Services

• Educate on additional benefits i.e. labor savings and environmental impact reduction

• Marketing a culture of conservation, encourage anonymous garment return

• Share results with leadership and each department
Challenges

• Acceptance of changes in practice and policy
• Data accuracy
• Education
• Distribution logistics
• Signage
• Hamper misuse
  • Reject bag placement
  • Linen in trash
  • Linen in red bag
Obstacles to adoption

• Reusable surgical linen
  ◆ Proposal increased total cost and conflicted with contracts
  ◆ Loss of rebates from manufacturers of disposables

• Reusable warm-up jackets
  ◆ Trialed three material types
  ◆ Decision to adopt dependent on vending machine control on access

• Reusable isolation gowns
  ◆ UCLA first UC to transition, anticipating savings
  ◆ To be trialed soon
Thank You!

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